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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,547	11/26/2003	Shigeru Hosoe	02860.0757	5751

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EXAMINER	
WOLLSCHLAGER, JEFFREY MICHAEL	
ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/721,547	HOSOE, SHIGERU	
	Examiner	Art Unit	
	Jeff Wollschlager	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-9,11-16,18-24 and 26-31* is/are pending in the application.

4a) Of the above claim(s) *2,11-14,20-22 and 29-31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-9,15,16,18,19,23,24 and 26-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 24, 2008 has been entered.

Response to Amendment

Applicant's amendment to the claims filed January 24, 2008 has been entered. Claim 1 is currently amended. Claims 2, 11-14, 20-22 and 29-31 remain withdrawn from further consideration. Claims 1, 5-9, 15,16,18,19, 23, 24 and 26-28 are under examination.

Claim Objections

Claim 7 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim only contains a limitation that is already recited in claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5, 7- 9, 15, 16, 18, 19, 23, 24, 26, 27 and 28 are rejected under 35 U.S.C. 103(a) as being obvious over Umetani et al. (US 5,171,348) in view of Roffman et al. (US 5,861,114) and Oomen (US 5,078,551).

Regarding claims 1 and 7, Umetani et al. teach a method of forming a die for press-molding an optical element wherein the die comprises a base material that is roughly machined/cut and a layer of Ni-P or Ni-B that is cut into a desired shape. The hardness of the Ni-P and Ni-B material ranges from a Vickers Hv of 500-1000 (Table 2; col. 1, lines 15-48; col. 2, lines 8-21; col. 3, lines 1-24; col. 4, lines 6-55). The Ni-P or Ni-B layer is applied to the base material to a thickness of 5 um and is then cut to form the desired optical die surface (col. 5, lines 48-54).

Umetani et al. do not teach cutting in to a depth of less than 1 um with a fixed single point diamond cutting tool. However, Roffman et al. teach a method of cutting dies/molds for forming complex optical surfaces wherein a single point diamond lathe having submicron precision and repeatability is employed (Abstract; col. 2, lines 47-67; col. 3, lines 8-29; col. 7, lines 52-67; col. 8, lines 28-35; col. 24, lines 55-col. 25, line 15; col. 32, lines 9-27). Further the examiner notes that the depth of cut of the Ni-P or Ni-B layer is intrinsically less than 5 um as

that is the starting thickness of the film. One having ordinary skill would have readily determined and optimized, in view of the combination with Roffman et al., how deep to cut into the Ni-P layer of Umetani et al. to achieve the desired optical surface (Umetani et al: col. 11, lines 28-32). Additionally, Oomen (Figure 3; col. 2, line 56-col. 3, line 44) disclose a diamond lathe wherein the cutting point is fixed while the workpiece moves.

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the teaching of Umetani et al. and to have employed the single point cutting tool/lathe disclosed by Roffman et al. and to have cut into the layer to a depth of 1 um or less, for the purpose, as suggested by Roffman et al., of producing a desired optical surface having submicron precision and accuracy while minimizing the amount of material to be cut. Additionally, Oomen discloses a diamond lathe wherein the cutting point is fixed while the workpiece moves. Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a cutting point that is fixed as suggested by Oomen in the method of Umetani et al. for the purpose of effectively cutting the surface with an art recognized suitable lathe configuration.

As to claim 5, Umetani et al. disclose an aspherical surface (col. 1, lines 15-20).

As to claims 8 and 9, Oomen teach that the [110] axial direction is preferred in cutting since it reduces wear (col. 4, lines 10-14). It would have been obvious to one having ordinary skill to have employed the diamond direction of Oomen for the purpose of effectively utilizing the diamond lathe while minimizing wear.

As to claims 15 and 16, Oomen teach rotating the material relative to the cutting tool and teach an angle of 5 ° (col. 3, lines 1-6). It would have been obvious to one having ordinary skill to have employed the angle of Oomen for the purpose of effectively utilizing the diamond lathe.

As to claims 18 and 19, Roffman et al. teach that a single point diamond lathe having submicron precision and repeatability is employed (Abstract; col. 2, lines 47-67; col. 3, lines 8-29; col. 7, lines 52-67; col. 8, lines 28-35; col. 24, lines 55-col. 25, line 15; col. 32, lines 9-27). One having ordinary skill would have been motivated to employ Roffman et al's lathe for the reasons set forth above.

As to claim 23, Roffman et al. disclose forming a soft/plastic contact lens (Abstract; col. 2, lines 4-9).

As to claim 24, Umetani et al. disclose forming a glass optical element (col. 1, lines 15-20).

As to claims 26 and 27, a variety of base and intermediate materials are disclosed by Umetani et al., including silicon carbide (col. 2, lines 6-20). As to claim 28, CVD is a conventional means of forming silicon carbide.

Claims 1, 5, 7, 23, 24, 26, 27 and 28 are rejected under 35 U.S.C. 103(a) as being obvious over Umetani et al. (US 5,171,348) in view of Roffman et al. (US 5,861,114) and Meyers et al. (US 5,638,212).

Regarding claims 1 and 7, Umetani et al. teach a method of forming a die for press-molding an optical element wherein the die comprises a base material that is roughly machined/cut and a layer of Ni-P or Ni-B that is cut into a desired shape. The hardness of the Ni-P and Ni-B material ranges from a Vickers Hv of 500-1000 (Table 2; col. 1, lines 15-48; col. 2, lines 8-21; col. 3, lines 1-24; col. 4, lines 6-55). The Ni-P or Ni-B layer is applied to the base material to a thickness of 5 um and is then cut to form the desired optical die surface (col. 5, lines 48-54).

Umetani et al. do not teach cutting in to a depth of less than 1 um with a fixed single point diamond cutting tool. However, Roffman et al. teach a method of cutting dies/molds for forming complex optical surfaces wherein a single point diamond lathe having submicron precision and repeatability is employed (Abstract; col. 2, lines 47-67; col. 3, lines 8-29; col. 7, lines 52-67; col. 8, lines 28-35; col. 24, lines 55-col. 25, line 15; col. 32, lines 9-27). Further the examiner notes that the depth of cut of the Ni-P or Ni-B layer is intrinsically less than 5 um as that is the starting thickness of the film. One having ordinary skill would have readily determined and optimized, in view of the combination with Roffman et al., how deep to cut into the Ni-P layer of Umetani et al. to achieve the desired optical surface (Umetani et al: col. 11, lines 28-32). Additionally, Meyers et al. (Figure 17; col. 17, lines 5-54) disclose a diamond lathe wherein the cutting point is fixed while the workpiece moves.

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the teaching of Umetani et al. and to have employed the single point cutting tool/lathe disclosed by Roffman et al. and to have cut into the layer to a depth of 1 um or less, for the purpose, as suggested by Roffman et al., of producing a desired optical surface having submicron precision and accuracy while minimizing the amount of material to be cut. Additionally, Meyers et al. discloses a diamond lathe wherein the cutting point is fixed while the workpiece moves. Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a cutting point that is fixed as suggested by either of Meyers et al. in the method of Umetani et al. for the purpose of effectively cutting the surface with an art recognized suitable lathe configuration.

As to claim 5, Umetani et al. disclose an aspherical surface (col. 1, lines 15-20).

As to claim 23, Roffman et al. disclose forming a soft/plastic contact lens (Abstract; col. 2, lines 4-9).

As to claim 24, Umetani et al. disclose forming a glass optical element (col. 1, lines 15-20).

As to claims 26 and 27, a variety of base and intermediate materials are disclosed by Umetani et al., including silicon carbide (col. 2, lines 6-20). As to claim 28, CVD is a conventional means of forming silicon carbide.

Claims 1, 7-9, 15, 16, 23, 24 and 26-28 are rejected under 35 U.S.C. 103(a) as being obvious over Uno et al. (US 5,008,002) in view of Roffman et al. (US 5,861,114) and Oomen (US 5,078,551).

Regarding claims 1, 7 and 26-28, Uno et al. disclose a method of producing a mold for obtaining glass articles comprising cutting a base mold of sintered silicon carbide (SiC) (Figure 2; col. 1, lines 6-33; col. 4, lines 34-42); coating the base mold with a CVD deposited SiC film (col. 2, lines 52-67), cutting to obtain a mirror surface (col. 4, lines 39-42) and depositing an i-carbon film on the SiC film (col. 5, lines 44-50). Uno et al. do not teach how deep the cut is into the SiC film or that the cut is made with a single point cutting tool that is fixed at the single point.

However, Roffman et al. teach a method of cutting dies/molds for forming complex optical surfaces wherein a single point diamond lathe having submicron precision and repeatability is employed (Abstract; col. 2, lines 47-67; col. 3, lines 8-29; col. 7, lines 52-67; col. 8, lines 28-35; col. 24, lines 55-col. 25, line 15; col. 32, lines 9-27). Additionally, Oomen (Figure 3; col. 2, line 56-col. 3, line 44) disclose a diamond lathe wherein the cutting point is fixed while the workpiece moves.

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the teaching of Uno et al. and to have employed the single point cutting tool/lathe disclosed by Roffman et al. and to have cut into the layer to a depth of 1 um or less, for the purpose, as suggested by Roffman et al., of producing a desired optical surface having submicron precision and accuracy while minimizing the amount of material to be cut. Additionally, Oomen discloses a diamond lathe wherein the cutting point is fixed while the workpiece moves. Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a cutting point that is fixed as suggested by Oomen in the method of Uno et al. for the purpose of effectively cutting the surface with an art recognized suitable lathe configuration.

As to claims 8 and 9, Oomen teach that the [110] axial direction is preferred in cutting since it reduces wear (col. 4, lines 10-14). It would have been obvious to one having ordinary skill to have employed the diamond direction of Oomen for the purpose of effectively utilizing the diamond lathe while minimizing wear.

As to claims 15 and 16, Oomen teach rotating the material relative to the cutting tool and teach an angle of 5 ° (col. 3, lines 1-6). It would have been obvious to one having ordinary skill to have employed the angle of Oomen for the purpose of effectively utilizing the diamond lathe while minimizing wear.

As to claim 23, Roffman et al. disclose forming a soft/plastic contact lens (Abstract; col. 2, lines 4-9).

As to claim 24, Uno et al. disclose forming a glass lens (Abstract).

Claim 6 is rejected under 35 U.S.C. 103(a) as being obvious over Umetani et al. (US 5,171,348) in view of Roffman et al. (US 5,861,114) and Oomen (US 5,078,551) as applied to claims 1, 5, 7, 8, 9, 15, 16, 23, 24, 26 and 27 above, in view of Border et al. (US 2003/0127759).

As to claim 6, the combination teaches the method as set forth above. Umetani et al. do not teach the diameter of the die/optical element is less than 5 mm. However, Border et al. teach that it is known in the art to make microlens molds having diameters down to the micron sized range (paragraph [0005, 0049]).

Therefore it would have been prima facie obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the size of the diameter of the die employed by Umetami et al., to a size of less than 5 mm as suggested by Border et al., for the purpose of producing a variety of different optical elements for various applications as is routinely practiced in the art.

Claim 6 is rejected under 35 U.S.C. 103(a) as being obvious over Umetani et al. (US 5,171,348) in view of Roffman et al. (US 5,861,114) and Meyers et al. (US 5,638,212) as applied to claims 1, 5, 7, 23, 24, 26 and 27 above, in view of Border et al. (US 2003/0127759).

As to claim 6, the combination teaches the method as set forth above. Umetani et al. do not teach the diameter of the die/optical element is less than 5 mm. However, Border et al. teach that it is known in the art to make microlens molds having diameters down to the micron sized range (paragraph [0005, 0049]).

Therefore it would have been prima facie obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the size of the diameter of the die employed by Umetami et al., to a size of less than 5 mm as suggested by Border et al., for the purpose of

producing a variety of different optical elements for various applications as is routinely practiced in the art.

Claims 8, 9, 15, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umetani et al. (U.S. 5,171,348) in view of Roffman et al. (US 5,861,114) and Meyers et al. (US 5,638,212), as applied to claims 1, 5, 7, 23, 24 and 26-28 above, and further in view of Yoshihiro et al. (U.S. 6,913,424).

As to claims 8, 9, 15 and 16, the combination teaches the method as set forth above. Umetani et al. do not teach controlling the cutting relative to the orientation of the diamond and controlling the rake angle as claimed. However, Yoshiro et al. disclose controlling the cutting relative to the orientation of the diamond and controlling the rake angle (col. 3, lines 5-8; col. 4, lines 35-47).

Therefore it would have been prima facie obvious to one having ordinary skill in the art at the time of the claimed invention to have employed the cutting method disclosed r Yoshihiro et al. to cut the die produced by Umetani et al. for the purpose of improving the quality and productivity of the cutting process, as is routinely practiced in the art.

As to claims 18 and 19, Yoshiro et al.'s (Abstract) machine is high precision and adjustable. Further, the machining equipment employed by Roffman et al. has submicron precision and repeatability (Abstract; col. 24, lines 55-64).

Response to Arguments

Applicant's arguments filed January 24, 2008 have been fully considered, but are moot in view of the new grounds of rejection necessitated by the amendment. However, regarding applicant's argument that Roffman et al. employ steel inserts, the examiner notes that the

inserts are plated (Figure 8 (124)) and that Roffman et al. plate with NiP (col. 32, lines 9-28). As disclosed by Umetani et al., NiP has a Vickers hardness up to 1000 (Table 2).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Wollschlager whose telephone number is (571)272-8937. The examiner can normally be reached on Monday - Thursday 6:45 - 4:15, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. W./
Examiner, Art Unit 1791

April 15, 2008

/Monica A Huson/

Primary Examiner, Art Unit 1791